

Response to August 8, 2005
California Integrated Waste Management Board's
Proposal on EPP Cartridge Standards

Xerox Corporation
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Content:

- I. Introduction
- II. Xerox's approach to resource recovery
- III. Xerox is the industry leader in remanufacturing
- IV. Comments on proposal
- V. Implications of these standards to California & Xerox
- VI. Closing comments

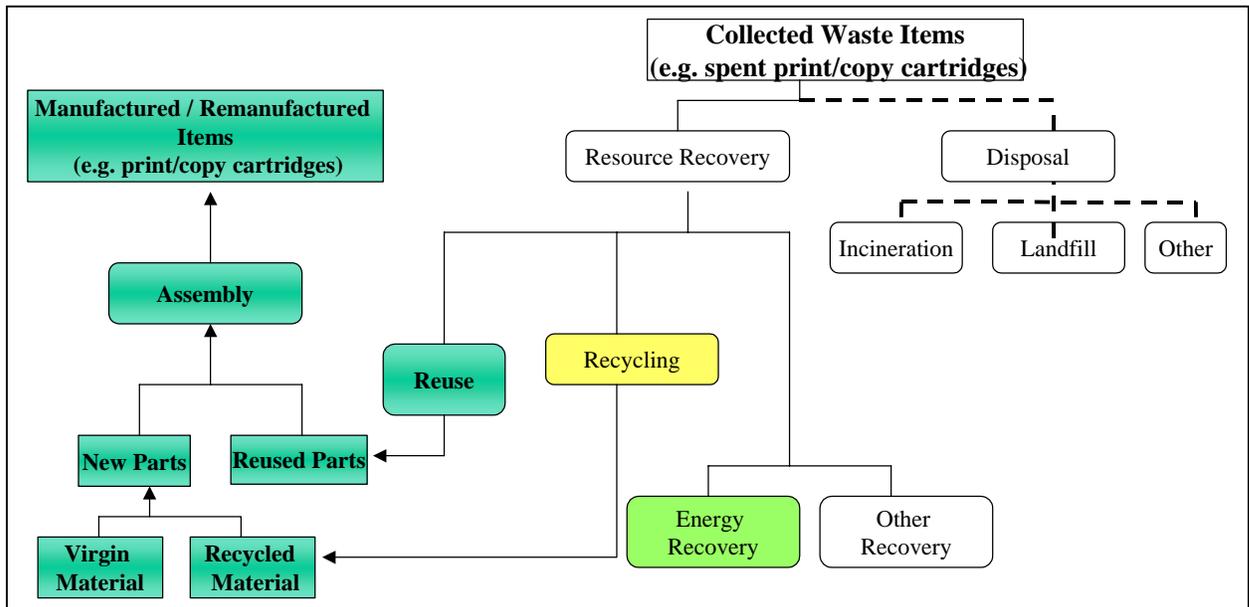
I Introduction

Xerox is supportive of California's desire to manage waste materials to reduce the overall impact to the environment. Based on our long experience in remanufacturing, the proposed EPP standard for printer and duplication cartridges raises some concerns that we will share in this document.

Xerox is an OEM, it is a remanufacturer, and it is also a third party remanufacturer of HP cartridges. This provides us with the unique ability to view issues from all perspectives and experience the positives and negatives of each type of business.

Remanufacturing involves more than just consumable supplies – it's the whole product, the integration of the equipment and supplies, and manufacturing processes. We have included some information on the full spectrum of Xerox's remanufacturing programs and achievements to illustrate Xerox's long expertise and experience in remanufacturing as a basis for evaluating our comments. Then we will focus more directly on the concerns regarding the proposed EPP cartridge standard.

II Xerox's approach to resource recovery:



Xerox uses three forms of resource recovery: 1) reuse as exemplified by our remanufacturing program; 2) recycling of materials for either the same or other uses; and 3) energy recovery. The terms remanufacturing and reuse are used interchangeably throughout this document. Xerox has a zero to landfill goal that requires the use of all three approaches. While not our first choice, energy recovery is an important form of recycling in today's world where the materials' recycling infrastructure is still developing. For now, we believe that waste-to-energy is an environmentally beneficial and necessary alternative. Xerox uses waste-to-energy for a very small proportion – less than 1% -- of our resource recovery efforts.

III Xerox is the industry leader in remanufacturing

Xerox pioneered remanufacturing & remains an industry leader

The practice of converting end-of-life equipment, parts, and supplies into new products is a process Xerox proudly pioneered back in the 1960s. With major advancements in the early 1990's, Xerox, to a large extent, invented the business of remanufacturing office equipment and supplies.

Xerox has firmly established comprehensive processes for taking back end-of-life products and supplies from our customers. Both our equipment and parts reuse programs fully support Xerox's strong commitment to waste-free products, supplies, and manufacturing.

Although Xerox is a well-known OEM, it is important to recognize that Xerox is also one of the largest, if not the largest, and most successful remanufacturer of office supplies and products in the world. In 2004,

- Xerox prevented 142 million pounds of material from entering landfills through the reuse and recycling of Xerox equipment and supplies.
- Xerox enabled energy savings of nearly 1.4 million megawatt hours through the reuse of parts and the sale of Energy Star products. That's enough energy to light more than 1.2 million US homes for a year.
- 90% of Xerox-designed product models introduced in 2004 have been developed with remanufacturing in mind.

Remanufacturing and recycling of consumable supplies highly successful

The reuse and recycling of supplies is something Xerox is particularly proud of. Xerox has well-established methods for collecting and reprocessing spent print/copy cartridges, toner containers and waste toner from Xerox office and production equipment. Prepaid postage labels and the packaging from new supplies allow customers to return these materials to Xerox for remanufacturing and recycling. Return labels are included in the box for new cartridges and waste toner bottles, and pre-paid postage labels are available on our web site for customers who wish to obtain additional labels to return spent consumables for reuse or recycling.

In addition, Xerox is one of the only companies that reuses waste toner. It may account for 25 percent of the weight of new toner without any compromise in toner functionality. The reuse of waste toner saves several million dollars each year in avoided raw material costs.

In 2004 our consumables recycling program, known as the Green World Alliance, prevented nearly 14 million pounds of waste from entering the landfills worldwide.

- Xerox customers worldwide returned more than 2.1 million cartridges and toner containers to Xerox.
- More than 90 percent by weight of these returned materials were remanufactured or recycled.
- 2.0 million pounds of post-consumer waste toner was processed for reuse.
- Xerox continued the practice of designing toner containers to incorporate post-consumer recycled plastic, achieving an average of 26 percent recycled content for toner bottles sold.

Remanufactured products are of the highest quality -- like new

Returned supply items are cleaned, inspected and then remanufactured or recycled. Remanufactured cartridges, containing an average of 90 percent reused parts, are built and tested to the same performance specifications as new products. These stringent performance specifications have been key to providing Xerox customers with top equipment performance and print quality, resulting in the success of Xerox's remanufacturing strategy. Savings are incorporated into the product development costs and passed on to our customers.

We even include a statement on our cartridge packaging indicating, “Contains new and reprocessed parts which meet performance standards of new parts.”

Xerox investments in R&D, technology, people, and processes are significant

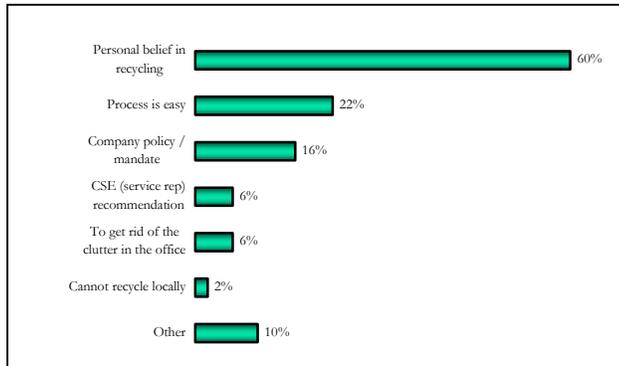
To ensure Xerox supplies and products meet the highest industry performance and quality standards, Xerox dedicates approximately \$60 million in Research and Development for supplies. For Xerox, this is a high-tech business demanding the dedication and support of 60 PhDs and 500 highly educated professionals. The group averages approximately 100 patents a year.

Xerox is constantly on a quest for continuous improvement in our supplies technology and our offerings. In fact, Xerox is set to launch the full-scale introduction and production of a new chemical, highly complex, toner, known as Emulsion Aggregation (EA) toner. EA toner manufacturing uses an estimated 25 percent less energy to manufacture than traditional toner. EA toner also reduces the amount of energy and waste associated with printing. It’s smaller particle size results in about 50 percent less toner per printed page. This is just one significant example of Xerox’s commitment to meeting ever-demanding customer requirements, whether it is for remanufactured cartridges, or cleaner and higher quality toner, or more user-friendly toner cartridges.

Education is very important

Xerox receives a high percent of empty print/copy cartridges returned for reuse. But, like everything else, there’s always room for improvement. We conducted research in late 2004 to see how we could increase returns.

Xerox had an independent company conduct telephone surveys of Xerox customers who take advantage of our return programs – to find out why they participate – and customers who do not participate – to find out why not. The research showed the #1 reason people participate is “personal belief in recycling” – 60%. It by far outpaced the second reason of “the process is easy” at 22%.



For those people who did not participate, the #1 reason for not participating was “Not aware of program” – 45%

Based on these results, Xerox took additional steps to ensure our customers were aware of our empty cartridge return programs and the environmental benefits.

IV Comments on proposal

Definition of “cartridge” requires additional detail

There are many types of cartridges, for different functions, used within printer and copier equipment. In addition, there are many cartridge designs, some very complex, and some less sophisticated. A clearer understanding is needed regarding what components are to be included under this standard. California already controls environmental attributes of simple toner

containers sold in the state through its Rigid Plastic Packaging Container law which imposes minimum recycle content, reuse and weight reduction.

It is interesting to note that third party remanufacturing companies are selective and often have specific listings of what they will accept within their collection programs. Xerox accepts, and pays the postage, for any Xerox component our customers wish to return for remanufacturing or recycling.

Tier 1:

The Tier 1 benchmark contains a statement prohibiting manufacturers from adopting design features or manufacturing processes that prevent print cartridges from being reused. This benchmark should not be written in a manner that would prevent the use by OEMs of chips in print cartridges. Chips play a vital role in ensuring that print cartridges perform precisely as the purchaser intends. Further, their presence is not inconsistent with CIWMB's goals in issuing an EPP standard for printer / copier cartridges. Drafting the standard in a manner that was interpreted to prohibit them would, therefore, create new problems for both consumers and producers, with no discernible benefits for the environment. The following is a discussion of the important role that chips play in the printer and copier process:

- Provide authentication that the consumable is a genuine Xerox product. This assures the user that they received a quality product that is guaranteed to perform to Xerox's strict specifications. Counterfeit product could compromise the output quality and equipment performance. Unfortunately, counterfeit is a growing concern for all industries, and it is the customer who experiences the negative impacts of a poor product.
- Increase user productivity by enabling services such as the monitoring of consumable usage and alerting the user when toner levels are getting low. The alert prevents the need to reprint blank pages, and reduces the risk of not having a replacement cartridge on hand.
- Enable the machine controls to make automatic adjustments for toner formulation improvements or changes to maximize print quality.
- Record a variety of information to help the customer understand how their equipment is being used and make appropriate business decisions.
- Record fault codes to enable troubleshooting and problem solving if a customer experiences difficulties. The chip data can assist service representatives at the account and telephone support personnel to analyze the problem. Downtime and quality issues, both major sources of customer dissatisfaction, can be minimized with proper data and tools.
- Prevent the use of an incorrect consumable in the machine to prevent equipment damage and compromised print quality.

Xerox invests hundreds of millions of dollars annually in product & consumables research and development to help ensure that we are providing the very best technologies and the highest quality products to our customers. The intellectual property (patents, copyrights, trade secrets and know-how) that went into developing these product improvements was created at considerable cost to Xerox. Monitoring chips assist in protecting Xerox's intellectual property, support future product development, and fund our substantial R & D investments.

Xerox cartridges **are** designed to be reused and remanufactured and Xerox actively supports their reuse. As previously described, Xerox has extensive return and remanufacturing programs. Third parties are also presently remanufacturing some Xerox cartridges with chips. At Recharger World Expo trade conference seminars, it has been acknowledged that chips provide performance benefits and it was stated that chips are part of industry practice and are here to stay. For the toner cartridge market most relevant to Xerox, the Remanufacturing Industry recently published they have 30% share of the North American toner market. (May 2005 International Imaging Technology Council's publication "Imaging Spectrum Magazine")

Tier 2:

This benchmark requires purchased cartridges to contain a minimum of 50 percent recycled content material by weight, with a minimum of 10 percent post consumer material. We believe that Xerox remanufactured cartridges, containing an average of 90% reused and recycled parts, would meet this benchmark. However, it is important to understand that any single print/copy cartridge will have a range of reused or recycled content. This is because worn parts need to be replaced – sometimes with new parts -- and because we may not recover enough spent cartridges to fulfill the needs of customers seeking replacement cartridges. This means that at any given time, some proportion of cartridges purchased by customers will be built from all new parts. Xerox fully integrates its new build and remanufacturing processes. It would not be possible for customers to purchase just remanufactured or all-new cartridges.

Tier 3:

This benchmark requires that purchased cartridges have been refurbished for reuse. Xerox does not have a category of cartridge called refurbished. As mentioned above, all Xerox remanufactured cartridges are made to the same standards and are like new product. Once again, it is important to understand that while our cartridges are designed for remanufacturing and we have mature collection programs in place, some cartridges will be built from new parts. This is because we do not have enough returns to supply 100% remanufactured cartridges.

Tier 4:

We are uncertain about CIWMB's intended meaning in this benchmark. There appear to be two different proposals. The first requires that the purchased cartridge have the potential for use in materials recycling. Xerox concurs with the practice of designing products with the potential for materials recycling. We are continually pursuing new ways to take components which cannot be reused and convert them into materials for other uses. Xerox engineers are also identifying reuse options for black toners not suitable for remanufacture. One such option is using reprocessed waste toner as a colorant in newly built plastic parts.

The second statement refers to a new concept of awarding EPP designations based on the percent of units returned for recycling. There are some products for which Xerox tracks the percent of returns, but it would be impractical for us to track quantities of every cartridge. In addition, we don't understand the value of this requirement.

Waste-to-energy conversion

While not our first choice, waste-to-energy recovery is an important form of recycling in today's world where the materials' recycling infrastructure is still developing. The recycling industry faces challenges of materials separation and uncertain supply and demand. Xerox is continuously working toward finding materials recycling outlets for recovered material and finding sources of quality post-consumer recycle material. Until the materials recycling infrastructure improves, we believe that waste-to-energy is an environmentally beneficial and necessary alternative technology to support our zero waste to landfill goal.

V Implications of these standards to California

Xerox understands and is supportive of CIWMB's efforts to define environmentally preferable print/copy cartridges. Xerox has a long-standing commitment to the environment and mature programs for remanufacturing and recycling print/copy cartridges. However, we are concerned that the benchmarks will be written in such a way that cartridges with chips may not meet CIWMB's environmentally preferable product standard. Given that possibility, the following questions arise about purchasing outcomes in the context of California State departments, agencies, and institutions current programs:

- Many California State organizations lease OEM equipment under programs where the service and supplies costs are included in a cost-per-copy charge. Would equipment on these “metered” plans be affected?
- If a third party remanufactured cartridge had a chip, would that mean that the State could not purchase those products? If they could still be purchased, how would that differ from an OEM remanufactured cartridge having a chip?
- If a third party remanufactured consumable is not available for a machine, could the State order remanufactured consumables with chips from an OEM?
- If a third party consumable is available, and used, would the State be prepared to pay for service costs where damage was caused by using a non-OEM consumable?
- How would California handle color consumables or newer chemical toner consumables where quality third party remanufactured products are not available?
- If an OEM’s future equipment integrates the functioning of the hardware and consumable via a monitoring and data collection chip, would that mean the State of California would choose to lease/purchase equipment that does not necessarily meet their business needs or quality requirements from a company that does not utilize chip technology?

VI Closing comments

Thank-you for the opportunity to submit comments as CIWMB develops environmentally preferable standards for copy/print cartridges. Xerox prides itself on our commitment to remanufacturing and our record of success in this area. We can assure the CIWMB that we will continue to “push the envelope” on our internal processes, product requirements, and creation of innovative technologies to support the environment and the needs of our customers.